

A revision of *Rubus* subg. *Malachobatus* (Focke) Focke and *Rubus* subg. *Diemenicus* A.R.Bean (Rosaceae) in Australia

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Summary

Bean, A.R. (1997). A revision of *Rubus* subg. *Malachobatus* (Focke) Focke and *Rubus* subg. *Diemenicus* A.R.Bean (Rosaceae) in Australia. *Austrobaileya* 5(1): 39–51. The five indigenous and naturalised Australian taxa belonging to *Rubus* subg. *Malachobatus* (Focke) Focke and *Rubus* subg. *Diemenicus* subg. nov. are treated. A new variety, *R. moluccanus* var. *trilobus* A.R.Bean is described. A key to the native and naturalised Australian taxa of *Rubus* is presented.

Keywords: taxonomy, Rosaceae, *Rubus*, Australian flora, key, *Rubus* subg. *Malachobatus*, *Rubus* subg. *Dalibarda*, *Rubus* subg. *Diemenicus*, *Rubus alceifolius*, *Rubus moluccanus* var. *moluccanus*, *Rubus moluccanus* var. *trilobus*, *Rubus hillii*, *Rubus x novus*, *Rubus gunnianus*.

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Introduction

Rubus L. is a large genus with many representatives in the northern hemisphere, but it is poorly represented in the southern hemisphere. For example, five indigenous species are recorded for New Zealand (Webb et al. 1980). Australia is similarly poorly endowed, with a total of eight indigenous species, one hybrid and some infraspecific taxa (Bean 1995, 1997).

Two subgenera are treated in this paper:

Rubus* subg. *Malachobatus (Focke) Focke is a large subgenus with an estimated 127 species (Thompson 1997), and with its centre of diversity in eastern Asia. Twenty species have been recorded for Malesia (Kalkman 1984). New Guinea has three indigenous species, and Australia has just one (*R. moluccanus* L.). A second species, *R. alceifolius* Poir. is naturalised in north Queensland. *Rubus rugosus* Sm., while not known to be naturalised in Australia, is occasionally cultivated, and has been misidentified by Australian botanists as either *R. moluccanus* (Symon 1986) or *R. hillii* (Bennett 1987).

Rubus gunnianus was formerly included by Focke (1910) with four other species (*R. lasiococcus* Gray, *R. pedatus* Sm., *R. fockeanus* Kurz and *R. dalibarda* L.) in *Rubus* subg. *Dalibarda* (L.) Focke. The first three of these species were transferred to *R. subg. Cylactis* (Focke) Focke by Bailey (1941), and all botanists since Focke have accorded *R. dalibarda* generic status, as *Dalibarda repens* L. (e.g. Bailey 1941, Gleason 1952, Scoggan 1978). *R. gunnianus* has a number of unique characteristics (see discussion later) and a new subgenus, *Rubus* subg. *Diemenicus* A.R.Bean is erected here for it.

This is the third and final paper revising the Australian species of *Rubus*. It is not intended to deal with the taxonomy of naturalised taxa of *Rubus* L. subg. *Rubus*, and in the following key, the European Blackberry complex (*R. fruticosus* agg.) is not subdivided. A key to these species may be found in Harden & Rodd (1990).

Taxonomy**Key to native and naturalised taxa of *Rubus* in Australia. Naturalised taxa are marked with an asterisk (*)**

1. Plants herbaceous, without prickles, carpels 6–10 **R. gunnianus**
Plants woody, with prickles, carpels 25–600 2
2. Vines, without differentiated stems or canes; inflorescence axillary,
 race-mose; flowers unisexual 3
 Sprawling shrubs, with stout sterile canes (primocanes) and
 flower-bearing side-shoots (floricanes); inflorescence terminal,
 paniculate; flowers bisexual 4
3. Undersides of leaflets densely hairy throughout; margins with 5–7
 teeth/cm; stipules present; carpels not glandular; aggregate fruits with
 16–30 hairy carpids **R. moorei**
 Undersides of leaflets glabrous except for domatia and hairs along veins;
 margins with 3–5 teeth/cm; stipules absent; carpels glandular; aggregate
 fruits with 35–65 glabrous carpids **R. nebulosus**
4. Leaves on primocanes (and floricanes) simple 5
 Leaves on primocanes compound 7
5. Stipules up to 15 × 15 mm, divided almost to their base, filamentous; leaves
 (especially young leaves) with a mixture of short and long hairs on
 adaxial surface ***R. alceifolius**
 Stipules up to 12 × 6 mm, undivided at base, not filamentous; leaves
 with only long hairs on adaxial surface, or glabrous 6
6. Most or all leaves prominently 3-lobed, with end lobe about
 two-thirds the length of the leaf; indumentum on petioles rather sparse,
 mostly appressed; petals mostly pink **R. moluccanus** var. **trilobus**
 Leaves unlobed or lobes <1 cm deep, never prominently 3-lobed;
 indumentum on petioles dense, mostly spreading; petals white
 **R. moluccanus** var. **moluccanus**
7. Leaves on primocanes pinnate or trifoliolate 8
 Leaves on primocanes pedate or palmate 14
8. Leaflets 3–5, white or yellowish underneath, due to dense cover of short
 hairs obscuring the leaflet surface 9
 Leaflets 5–9, green underneath, glabrous or hairy, surface of leaflets not
 obscured by hairs 11
9. Branchlets with erect reddish hairs or bristles; petals white; fruits yellow ... ***R. ellipticus**
 Branchlets with appressed white hairs; petals pink or red; fruits (when
 formed) red 10
10. Stipules 2-lobed, occasionally 3 or 4-lobed, fruits never formed **R. x novus**
 Stipules entire, fruits formed **R. parvifolius**

11. Branchlets glabrous; leaflets glabrous or sparsely hairy on veins 12
 Branchlets hairy; leaflets hairy throughout 13
12. Most carpels glandular; leaflets 14–27 mm wide; petals hairy on
 both surfaces **R. queenslandicus**
 No carpels glandular; leaflets 20–48 mm wide; petals glabrous on inner
 surface **R. probus**
13. Flowers with 5 petals **R. rosifolius** var. **rosifolius**
 Flowers with 9–13 petals **R. rosifolius** var. **commersonii**
14. Leaflets deeply incised or pinnatisect ***R. laciniatus**
 Leaflets often lobed, but never deeply incised or pinnatisect. 15
15. Floricanes pruinose; mature fruits red ***R. ursinus**
 Floricanes not pruinose; mature fruits black 16
16. Lower surface of leaflets green and stems without glandular hairs; petals
 11–16 mm long ***R. bellobatulus**
 Lower surface of leaflets glaucous or stems with glandular hairs; petals
 6–11 mm long ***R. fruticosus** agg.

Rubus subg. **Malachobatus** (Focke) Focke, Biblioth. Bot. 72: 41 (1910); *R.* sect. *Malachobatus* Focke, Abh. Naturwiss. Vereine Bremen 4: 187 (1874). Type: not designated

About 127 species, mostly eastern and south-eastern Asia, also Malesia, Australia, western Pacific islands.

Shrubs, prickles present; leaves mostly simple, entire or lobed. Glands absent. Stipules free, on the twigs near the petiole base, mostly more or less divided. Inflorescence terminal, paniculate. Flowers mostly bisexual, carpels mostly 30–180; fruits red, succulent.

Rubus alceifolius Poir. in Lam., Encycl. 6: 247 (1804); *R. moluccanus* var. *alceifolius* (Poir.) Kuntze, Meth. Sp.-Beschr. Rubus 56 (1879). **Type:** Java, 1766–69, *P. Commerson* s.n. (holo: P–JU, microfiche!).

For synonymy, see Kalkman (1984).

Illustrations: W.T. Parsons & E.G. Cuthbertson, Noxious Weeds of Austral. (1992: 576); D.L. Jones & B. Gray, Climbing Pl. in Austral. (1988: 331).

Erect shrubs, sometimes semi-scandent, up to 6 m high. Stems hairy, with stout, curved to almost straight prickles to 4 mm long. Leaves simple. Petioles 35–55 mm long, terete, hairy, with a few stout prickles. Stipules rather caducous, orbicular in outline, to 15 mm long, 15 mm wide, divided almost to the base, with linear lobes; attached to stem at petiole base. Blades of leaves broadly ovate to orbicular, 85–150(–200) × 70–130(–200) mm, shallowly 5–7-lobed; upper surface green, hairy, comprising sparse long straight hairs and dense short stiff hairs; lower surface brown or yellowish, densely hairy, with short curly hairs almost or completely obscuring the leaf surface, and longer straight, spreading hairs on the veins; glands absent; base cordate; apex acute; margins serrate, with serrations 1–1.5 mm deep. Leaves palmately at base, then pennately with 2–3 pairs of lateral veins, terminating at a major tooth; venation reticulate, midrib and lateral veins flat to slightly impressed above, raised below, prickles occasionally present. Inflorescences terminal or in upper leaf axils, up to 100 mm long, each with up to 10 flowers. Bracts broadly ovate in outline, to 17 mm long, deeply pinnatisect, segments linear, acute, hairy outside, glabrous inside. Pedicels terete, 5–14 mm long, sessile glands absent. Flowers

bisexual. Flower buds globular, hypanthia shallowly convex to almost flat, densely hairy, unarmed or with a few short prickles. Sepals persistent, ovate, 9–10 × 5.5–7 mm, outer ones with 5–7 prominent linear lobes, inner ones not or scarcely lobed; sepals recurved at fruiting stage, and becoming somewhat larger; with dense white hairs on both surfaces, prickles absent. Petals not persistent, orbicular, shortly clawed, 7–9 × 7–8.5 mm, glabrous, white, apex obtuse. Stamens 200–280; filaments up to 5.5 mm long, glabrous; anthers c. 0.75 mm long, versatile, dorsifixed, with several hairs at apex. Carpels 110–180, glabrous, glands absent; ovaries c. 1.0 mm long, styles c. 0.9 mm long. Carpels extending to base of torus, annulus of hairs present at base of torus. Collective fruit globular, c. 16 × 16 mm when dried, c. 25 × 25 mm when fresh, exocarp red at maturity. Endocarps reniform to ovoid, rugose, c. 2.5 × 1.7 × 1.3 mm.

Selected specimens: Queensland. COOK DISTRICT: 6 km E of Babinda, Dec 1992, *Bean* 5332 (BRI); c. 2 km SW of Bramston Beach on road from Bruce Hwy, Aug 1989, *Blaxell* 89/160 et al. (NSW); Palmerston Highway c. 10 km from Millaa Millaa, Nov 1979, *Clarkson* 2731 (BRI); c. 40 km SE of Atherton at Josephine Falls, Aug 1981, *Croat* 52636 (NSW); c. 11 mls [18 km] from Innisfail near Waugh's Pocket, May 1952, *Everist* 5087 (BRI); S.F. 310 Gadgarra, track to Yeti Ridge, end of Fuller road, Jul 1995, *Forster* PIF17129 & *Figg* (BRI, K, MEL, NSW, QRS); Swipers flat, Wooroonooran N.P., Jul 1995, *Forster* PIF17148 & *Figg* (BRI, MEL, NSW); Churchill Ck, Churchill L.A., SF 143, Jul 1995, *Forster* PIF17199 & *Figg* (BRI, MEL, NSW, QRS); Cape Kimberley road, Nov 1995, *Forster* PIF18178 (BRI, QRS); SFR 755, Bartle Frere, Boonjee L.A., Mar 1993, *Gray* 5642 (QRS); Danbulla, May 1961, *Hylland* 1859 (BRI); Cucania, near junction of Russell and Mulgrave Rivers, *Thorne* 23132a et al. (BRI); Bellenden Ker, Mar 1922, *White* 1261 (BRI); Babinda, Jan 1923, *White* s.n. (BRI). NORTH KENNEDY DISTRICT: 1 km W of Paluma, NW of Townsville, May 1992, *Bean* 4412 (BRI, K, MEL, NSW); Tam O'Shanter S.F. 1137, Mission Beach-Tully road, Jul 1995, *Forster* PIF17356 (BRI, MEL, NSW, QRS); 14 km NW of South Johnstone, Oct 1988, *Jessup* GJM2514 et al. (BRI); 11 km N of Tully on Bruce Highway, Apr 1975, *Orchard* 4657 (BRI); Mission Beach, Feb 1980, *Stanley* 80255 (BRI). PORT CURTIS DISTRICT: Quinns Gap road, c. 12.5 km NW of Carmila, Jul 1994, *McDonald* 6056 et al. (BRI).

Distribution and habitat: *R. alceifolius* is indigenous to south-east Asia, from southern China to Indonesia, as far east as Sulawesi (Celebes). Naturalised populations in Australia extend from Cape Tribulation to Tully, with two disjunct populations further south at Paluma and Carmila (Map 1). It grows in

thickets on the edges of mesophyll or notophyll rainforest, and on other disturbed sites where rainforest once grew.

Phenology: Flowers have been recorded throughout the year; fruits have been recorded between May and August.

Notes: *R. alceifolius* is closely related to *R. moluccanus*, but can be readily distinguished by the deeply divided bracts and stipules with filiform segments, the leaves which are 5–7-lobed and often orbicular in outline, the globular flower buds, the indumentum on the adaxial leaf surface which comprises a mixture of long and short hairs (long hairs only in *R. moluccanus*) and the greater number of carpels and stamens per flower.

I support the widely held belief that this species is naturalised in Australia. *R. alceifolius* was not recorded by F.M. Bailey during the Bellenden Ker Expedition in 1889, nor in Bailey (1900). It was first collected in Australia by C.T. White in March 1922, from Bellenden Ker (presumably near the railway siding of that name), and shortly after from Babinda. The species is apparently continuing to spread, as some recent collections are a long way from the first recorded locations.

R. alceifolius is considered a serious weed in Eacham, Johnstone and Mulgrave Shires, and is a Declared Plant, Category P3 under the *Queensland Rural Lands Protection Act* (1985–88), where 'infestations must be reduced'.

Rubus moluccanus L., Sp. Pl. 1197 (1753).

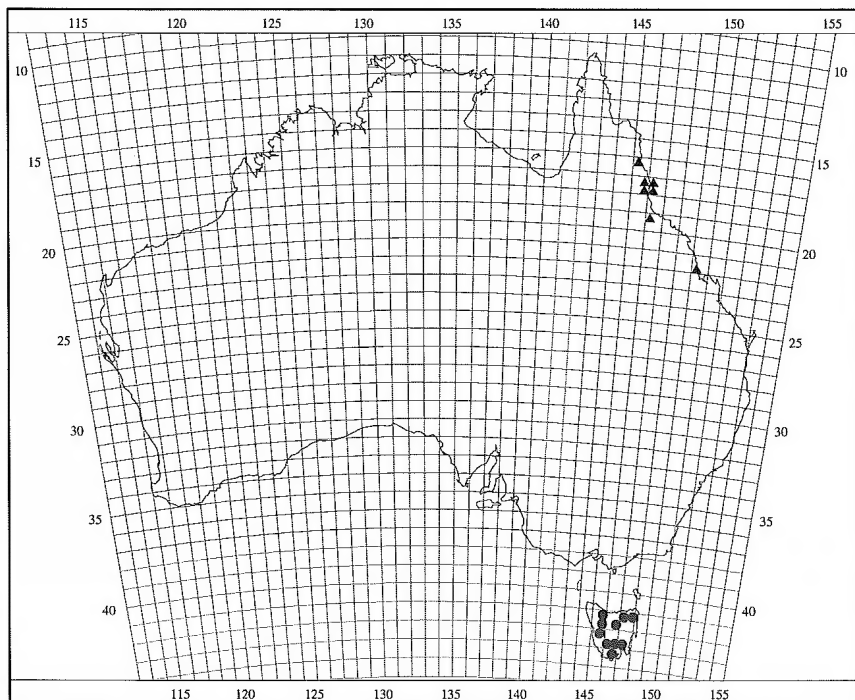
Type: plate 47, fig. 2, in Rumphius, Herb. Amboin. 5: 88 (1747).

Rubus haskarlii subsp. *dendrocharis* Focke, Biblioth. Bot. 72: 99 (1910); *R. dendrocharis* (Focke) Focke, Bot. Jahrb. Syst. 54: 70 (1916); *R. moluccanus* var. *dendrocharis* (Focke) P. Royen, Phan. Monogr. 2: 106 (1969). **Type:** Bele River, 18 km NE of Lake Habbema, Nov 1938, *Brass* 11387 (neo: A, fide Royen (1969); iso: BRI).

For further synonymy, see Kalkman (1984).

Erect shrubs, sometimes semi-scandent, up to 6 m high. Stems hairy, with stout, curved to almost straight prickles to 2 mm long. Leaves simple. Petioles 22–52 mm long, slightly grooved on upper surface, hairy, with a few stout prickles. Stipules caducous, elliptic in outline, to 12 mm long, 6 mm wide, undivided at base, with linear lobes; attached to stem at petiole base. Blades of leaves ovate to broadly ovate, 45–150 × 40–125 mm, shallowly 3–5-lobed or prominently 3-lobed, or sometimes entire; upper surface green, sparsely hairy, comprising long straight hairs only; lower surface brown or yellowish, densely hairy, with short curly hairs obscuring the leaf surface, and longer straight, appressed or spreading hairs on the veins, glands absent; base cordate to auriculate, but adjacent lobes only rarely touching each other; apex acute or occasionally obtuse; margins serrate, with serrations 1–2 mm deep. Leaves palminnerved at base, then penninerved with 5–7 pairs of lateral veins,

terminating at a major tooth; venation reticulate, midrib and lateral veins flat to slightly impressed above, raised below, prickles occasionally present. Inflorescence terminal or in upper leaf axils, up to 120 mm long, with up to 15 flowers. Bracts ovate to broadly ovate in outline, to 9 mm long, deeply pinnatisect, segments linear, acute, hairy outside, glabrous inside. Pedicels terete, 6–11 mm long, sessile glands absent. Flowers bisexual. Flower buds ovoid, hypanthia shallowly convex to almost flat, densely hairy, unarmed. Sepals persistent, deltate, 6–9 × 4–5 mm, without an acumen, entire or with 3–5 short lobes, recurved at fruiting stage, and becoming somewhat larger; with dense white hairs on both surfaces, prickles absent. Petals not persistent, broadly ovate, not or shortly clawed, 6–8 × 4–5.5 mm, glabrous or sparsely hairy, white or pink, apex obtuse. Stamens 60–110; filaments up to 4 mm long, glabrous; anthers c. 0.75 mm long, versatile, dorsifixed, glabrous or with several hairs at apex. Carpels 35–70, glabrous, glands absent; ovaries c. 0.9 mm long, styles



Map 1. Distribution of ▲ *Rubus alceifolius* and ● *R. gunnianus*.

c. 7.5 mm long. Carpels extending to base of torus, annulus of hairs present at base of torus. Collective fruit globular or oblate, c. 10 × 13 mm when dried, c. 12 × 16 mm when fresh, exocarp red at maturity. Endocarpids reniform to ovoid, lacunose, c. 2.3 × 1.5 × 1.5 mm.

Two varieties occur in Australia; *R. moluccanus* var. *moluccanus* and *R. moluccanus* var. *trilobus*.

Rubus moluccanus L. var. **moluccanus**

Rubus hillii F.Muell., Trans. & Proc. Philos. Inst. Victoria 2: 67 (1857). **Type:** Queensland. MORETON DISTRICT: Brisbane River, post Feb 1855, *W.Hill* s.n. (holo: MEL [MEL 31307]; iso: K).

Rubus capricorni Focke, Annuaire Conserv. Jard. Bot. Geneve 20: 106 (1917). **Type:** Queensland. COOK DISTRICT: Kamerunga near Cairns, 1885–89, *O.Warburg* 18628 (holo: B, destroyed).

Rubus moluccanus var. *austropacificus* P.Royen, Phan. Monogr. 2: 113 (1969) ('austropacificus'). **Type:** Bougainville. Tuareruku village W of Toiumonapu Plantation, S of Kieta, 4 July 1963, *P. van Royen* NGF 16444 (holo: L n.v.; iso: BRI).

Leaves 85–130 × 60–125 mm, shallowly 3–5-lobed, with sinuses <10 mm deep, or entire; young stems, petioles and veins of the lower leaf surface with erect or spreading, long straight hairs, as well as short curly hairs which obscure the lamina; petals white.

Selected specimens: Queensland. COOK DISTRICT: c. 14 mls [23 km] NNW of Daintree, Nov 1967, *Boylard & Gillieatt* 415 (BRI, MEL, NSW); Black Mountain road, near Kuranda, Jan 1968, *Brass* 33753 (QRS); c. 1 km S of Kuranda on road to Wrights Lookout, Jan 1980, *Clarkson* 2752 (BRI, QRS); near Mt Haig, c. 4.5 km NNW of Danbulla, Nov 1979, *Clarkson* 2722 (BRI, L, QRS); 32 km along road to Leo Creek, McIlwraith Range, Jun 1995, *Forster* PIF16821 (BRI, K, MEL, NSW, QRS); Home Rule, Jul 1995, *Forster* PIF17289 & *Figg* (BRI, MEL, NSW, QRS); Nissen Creek, Mt Perseverance road, Jul 1995, *Forster* PIF17178 & *Figg* (BRI, QRS); Timber Reserve 14, Kesteven, Oct 1981, *Hyland* 11152 (QRS); Noel L.A., N of Tinaroo Falls Dam, Nov 1981, *Kanis* 2152 (BRI, CANB). NORTH KENNEDY DISTRICT: just W of Paluma, NW of Townsville, Feb 1992, *Bean* 3948 (BRI);

top of Seaview Range escarpment, Trebonne-Mt Fox road, Apr 1985, *Rodd* 4485 & *Hardie* (BRI, MEL, NSW); headwaters of Dryander Creek, Mt Dryander, Feb 1971, *Webb & Tracey* 10073 (BRI, CANB); Wilkin Hill, Hinchinbrook Is., May 1972, *Webb & Tracey* 12011 (BRI, CANB, QRS). SOUTH KENNEDY DISTRICT: Mt Blackwood, Mar 1987, *Thompson* 79 (BRI). WIDE BAY DISTRICT: Gheerulla Falls, Mapleton S.F., Nov 1990, *Bean* 2684 (BRI, NSW); Kin Kin, Jan 1917, *White* s.n. (BRI, K). MORETON DISTRICT: Mt Cougal N.P., Upper Currumbin Creek, Mar 1997, *Bean* 11765 (BRI, MEL, NSW); 2.5 mls [4.0 km] SW of Nambour, Jan 1970, *Parsons* s.n. (BRI); Mt Glorious, Dec 1950, *StJohn* 24402 (K). New South Wales. NORTH COAST: Richmond River, undated, coll. unknown (NSW [NSW394747]); Clarence River, undated, ?*Moore* (MEL [MEL 31326]).

Distribution and habitat: *R. moluccanus* var. *moluccanus* is native to south-east Asia, including Thailand, throughout Malesia and extending to Fiji (Kalkman 1984). In Australia, it is indigenous to coastal areas from northern Queensland to northern New South Wales (Map 2), although no collections have been made in New South Wales for over 100 years. It grows in open locations within or fringing notophyll or mesophyll rainforest, or sometimes in open forest with (for example) *Eucalyptus grandis* W.Hill ex Maiden at altitudes from sea-level to 1140 metres.

Phenology: Flowers and fruits have been recorded for most months of the year.

Note: Bentham (1864) recorded *R. moluccanus* for the Northern Territory based on a specimen with the label 'Port Efsington [Essington?], Armstrong'. This distributional record was subsequently repeated by Ewart & Davies (1917) and appears in several popular publications of recent years. However, the record appears to be erroneous. Firstly, the specimen in question belongs in *R. moluccanus* var. *discolor* (Bl.) Kalkman, a taxon not recorded for Australia, but common in Malesia and the islands of the western Pacific. Secondly, *R. moluccanus* is not otherwise known from the Northern Territory, based on both herbarium records and the comprehensive atlas provided by Liddle et al. (1994). Furthermore, no *Rubus* species has been seen by botanists of the Northern Territory Herbarium (DNA) (C. Dunlop, pers. comm.).

Armstrong is known to have collected in Timor for some years (Britten & Boulger 1931), and it is likely that the 'Port Essington' specimen has originated from Timor, and that a misplacement of specimen labels has occurred.

Typification: The holotype of *R. capricorni* was destroyed during World War II. Isotypes were sought from E, K, BM, FI, G and W, but without success. The protologue is sufficiently detailed to allow placement of this name as a synonym of *R. moluccanus* var. *moluccanus*.

Conservation status: *R. moluccanus* var. *moluccanus* is a widespread and common taxon. No conservation coding is recommended.

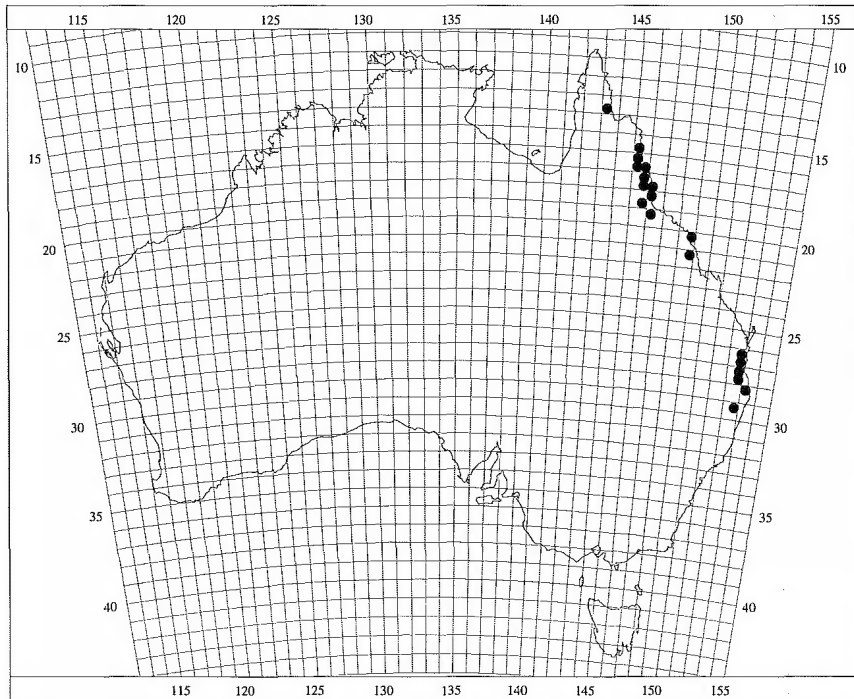
***R. moluccanus* var. *trilobus* A.R.Bean var. nov. varietati *moluccanae* affinis, sed**

foliis conspicue trilobis lobo suo terminali longitudine dimidium folii excedenti, indumento plerumque adpresso et petalis saepe roseis, differens. **Typus:** New South Wales. NORTHERN TABLELANDS: Giro State Forest, between Walcha and Gloucester, 10 December 1996, A.R. Bean 11477 (holo: BRI; iso: K, L, MEL, NSW).

[*R. hillii* auct. non F.Muell.]

Illustration: G.R. Cochrane et al., *Fl. & Plants of Victoria & Tasmania*, p. 97 (1980), as *R. hillii*.

Leaves 45–110 × 40–100 mm, deeply 3-lobed, with sinuses >10 mm deep, and terminal lobe c. two-thirds of leaf length; young stems, petioles and veins of the lower leaf surface with appressed or sometimes spreading, long straight hairs, as well as short curly hairs which obscure the lamina; petals usually pale or deep pink, but sometimes white.



Map 2. Distribution of *Rubus moluccanus* var. *moluccanus*.

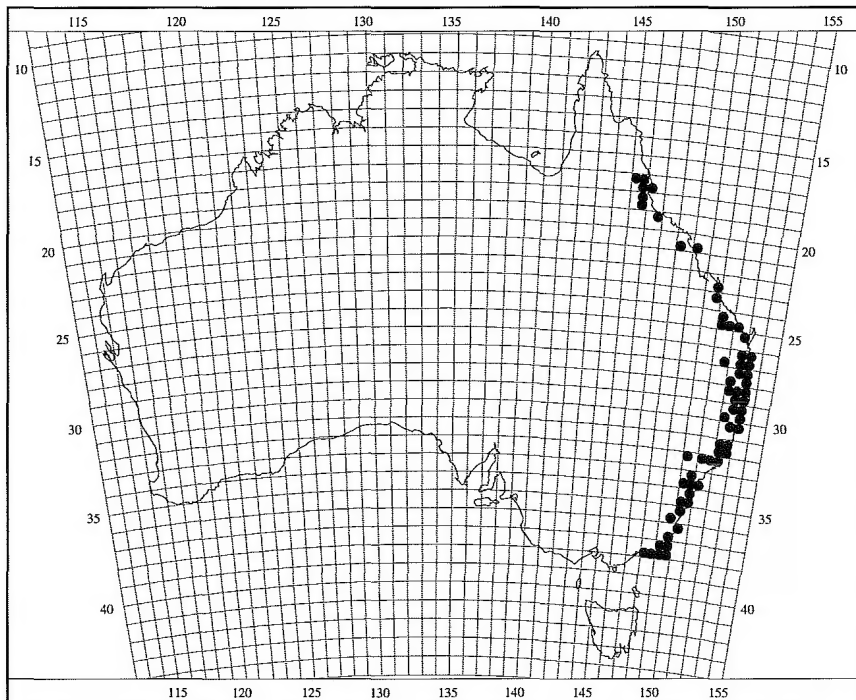
Selected specimens: Queensland. COOK DISTRICT: Sylvia Creek c. 4 km W of Atherton, Nov 1979, *Clarkson* 2742 (BRI, QRS). NORTH KENNEDY DISTRICT: Mt Graham, Rockingham Bay, *Dallachy* s.n. (MEL); Magnetic Island, around summit of Mt Cook, Aug 1982, *Sandercoe* 903 (BRI). SOUTH KENNEDY DISTRICT: Carlisle Island, 35 km N of Mackay, Sep 1986, *Sharpe* 4466 et al. (BRI). PORT CURTIS DISTRICT: Mt Maria, c. 65 km NW of Bundaberg, Nov 1993, *Bean* 7003 (BRI, DNA); Rockhampton, Apr 1868, *O'Shanesy* 99 (MEL). WIDE BAY DISTRICT: Middle road, near Kenilworth-Jimna road, Dec 1990, *Bean* 2710 (BRI, CANB, MEL). DARLING DOWNS DISTRICT: Spicers Gap, Main Range N.P., via Aratula, May 1995, *Bean* 8643 (BRI, MEL). MORETON DISTRICT: Mount Mistake, Nov 1930, *Hubbard* 5217 (BRI, K). **New South Wales.** NORTHERN TABLELANDS: Mt Boss SF, 45 km NW of Wauchope, May 1975, *Coveny* 6375 et al. (K). NORTH COAST: Dalmorton State Forest, SW of Grafton, Aug 1994, *Bean* 7766 (BRI); Toonumbar, NW of Kyogle, May 1949, *Constable* NSW10543 (K, NSW). CENTRAL TABLELANDS: Murdering Gully, Kanangra, 10 miles [16 km] SE of Jenolan Caves, May 1965, *Constable* 5906 (K, NSW); foot of Katoomba Falls, Blue Mts, Dec 1950, *StJohn* 24604 (K, NSW). CENTRAL COAST: Bulli Pass, Apr 1896, *Morrison* 5271 (K, NSW). SOUTH COAST: Mt Dromedary, Couria Creek, Mar 1980, *Craven* 5422 (BRI, CANB, MEL, NSW); McCarthys Ck, Tantawangalo S.F., Dec 1990, *Crawford* 1249 (MEL, NSW). **Victoria.** Howe Ranges, N of Marshmead, Nov 1969, *Beaglehole* 31453 & *Willis*

(MEL); Scout Camp Rd, Major Ck crossing, 5.1 km N of Orbost, Aug 1979, *Forbes* 140 (MEL, NSW); Newtons Ck, near Cabbage Tree Creek, Dec 1910, *StJohn* s.n. (K, MEL).

Distribution and habitat: *R. moluccanus* var. *trilobus* is endemic to Australia, and it extends from the Atherton Tableland in north Queensland to far eastern Victoria (Map 3). It commonly grows in gullies or sheltered situations in open eucalypt forest, and also on the edges of notophyll rainforest. In north Queensland it is confined to altitudes above c. 500 metres, but elsewhere it may extend to sea-level.

Phenology: Flowers and fruits have been recorded from every month of the year.

Notes: The rank of variety has been chosen for this taxon, because it differs from *R. moluccanus* sens. str. only in the leaf shape, characters of the indumentum and the often pink petals; and because this rank is compatible with the treatment of Kalkman (1984). The



Map 3. Distribution of *Rubus moluccanus* var. *trilobus*

name *R. hillii* has long been misapplied to this taxon.

Conservation status: *R. moluccanus* var. *trilobus* is a widespread and common taxon. No conservation coding is recommended.

Rubus x novus Kuntze, Meth. Sp.-Besch. *Rubus* (1879). **Type:** New South Wales. NORTH COAST: Hastings River, in 1862, *H. Beckler* s.n. (lecto, here designated: K).

Rubus x illegitimus Focke, Annuaire Conserv. Jard. Bot. Geneve 20: 106 (1917). **Type:** Queensland. DARLING DOWNS DISTRICT: Toowoomba, 1885–89, *O. Warburg* 18629 (holo: B, destroyed).

Rubus x novae-cambriae Gand., Bull. Soc. Bot. France 65: 25 (1918). **Type:** New South Wales. CENTRAL COAST: Menangle, Oct 1893, *R.T. Baker* s.n. (holo: LY n.v., photo at NSW).

Sprawling shrubs, sometimes semi-prostrate, up to 1 m high. Stems hairy, with stout, curved to almost straight prickles to 2.5 mm long. Leaves up to 105 mm long, usually trifoliate, rarely simple but then deeply 3-lobed. Petioles 10–44 mm long, grooved on upper surface, hairy, with a few stout prickles. Petiolules of lateral leaflets absent or up to 1 mm long, grooved, hairy; petiolules of terminal leaflets 0–11 mm long, grooved above, hairy. Stipules persistent, linear, to 12 mm long, 1.5 mm wide, usually 2-lobed, sometimes these lobes further divided; apex acute, attached at junction of petiole and stem. Blades of leaflets ovate, 25–75 × 2–50 mm, the terminal leaflet often larger than the lateral ones; upper surface green, sparsely hairy, comprising long straight hairs only; lower surface white or yellowish, densely hairy, with short curly hairs obscuring the leaf surface, and longer straight, appressed or spreading hairs on the veins; glands absent; base broadly cuneate or obtuse, sometimes oblique in lateral leaflets; apex acute; margins serrate, with serrations 1–3 mm deep. Leaflets penninerved with 4–6 pairs of lateral veins, terminating at a major tooth; venation reticulate, midrib and lateral veins impressed above, raised below, prickles occasionally present.

Inflorescence terminal or in upper leaf axils, up to 80 mm long, with up to 10 flowers. Bracts 3–5-partite, to 9 mm long, segments linear, acute, hairy outside, glabrous inside. Pedicels terete, 4–20 mm long, hairy, glands absent. Flowers bisexual. Flower buds ovoid, hypanthia shallowly convex to almost flat, hairy, unarmed. Sepals persistent, deltate, 5.5–7 × 2.5–3.5 mm, including a 0.5–2.5 mm long acumen, entire or occasionally with small lobes, recurved after anthesis; with dense white hairs on both surfaces, prickles absent. Petals not persistent, elliptical, clawed, 6–8 × 4–5 mm, glabrous or with some hairs on outer surface, pink. Stamens 50–80, glabrous; filaments up to 4.5 mm long, anthers c. 0.75 mm long. Carpels 40–50, glabrous, glands absent; ovaries c. 1.0 mm long, styles c. 5.5 mm long. Carpels extending to base of torus, annulus of hairs present at base of torus. Fruits never formed.

Selected specimens: Queensland. SOUTH KENNEDY DISTRICT: headwaters of East Funnel Creek, SSE of Sarina, Sep 1993, *Champion* 862 (BRI). PORT CURTIS DISTRICT: Reedy Creek, 8 km SE of Lowmead on Bundaberg road, May 1976, *Rodd* 3046 & *Jacobs* (NSW). BURNETT DISTRICT: Mt Perry, undated, *Keys* s.n. (BRI). DARLING DOWNS DISTRICT: Cherry Plain Lookout track, Bunya Mountains N.P., May 1996, *Grimshaw* PG2470 & *Grimshaw* (BRI, NSW). MORETON DISTRICT: 6.5 km WNW of Bellthorpe Hall, towards Forestry station, Feb 1989, *Bean* 1004 (BRI); foothills of Mt Ballow, downstream from Grace's Hut, Dec 1989, *Bean* 1287 (BRI, L, NSW); 7 km NW of Mt Glorious, Jan 1990, *Bean* 1331 (BRI, L, NSW); Tamborine Mtn, Dec 1926, *White* 3344 (BRI). **New South Wales.** NORTH COAST: Maclean, Feb 1913, coll. unknown (NSW); Gloucester, Jan 1882, *Betche* s.n. (NSW); Ramornie, 3 miles [5 km] NW of Copmanhurst, Jul 1922, *Blakely & Shireess* s.n. (NSW); Laurieton (Camden Haven), Nov 1944, *McComish* s.n. (NSW). CENTRAL WESTERN SLOPES: Murrumbidgee, May 1986, *Cherry* s.n. (NSW). CENTRAL TABLELANDS: Bundanoon, Feb 1897, *Steel* s.n. (NSW). CENTRAL COAST: Pulbah Island, Lake Macquarie, Nov 1929, *Cheel* s.n. (NSW); Bulli, Dec 1888, *Fletcher* s.n. (NSW); Point Clare, Jun 1897, *Forsyth* s.n. (NSW); Machin's Crater, 5.5 miles [8.8 km] SSE of Glenbrook, Mar 1970, *Pickard* 953 (NSW). SOUTH COAST: Kiah (or Towamba) River c. 2.5 km NE of Kiah, Nov 1976, *Jacobs* 2880 (NSW). **Victoria.** 4 km NE Goongerah, Orbost region, Jan 1986, *Chesterfield* 651 (MEL).

Distribution and habitat: *R. x novus* has been recorded along the eastern Australian coast, from Mackay in Queensland to eastern Victoria (Map 4). It grows close to notophyll rainforest or in tall eucalypt forest, dominated by species such as *Eucalyptus saligna* Sm. and *E. microcorys* F. Muell.

Phenology: Flowers have been recorded between June and March.

Conservation status: *R. x novus* is a widespread and common taxon. No conservation coding is recommended.

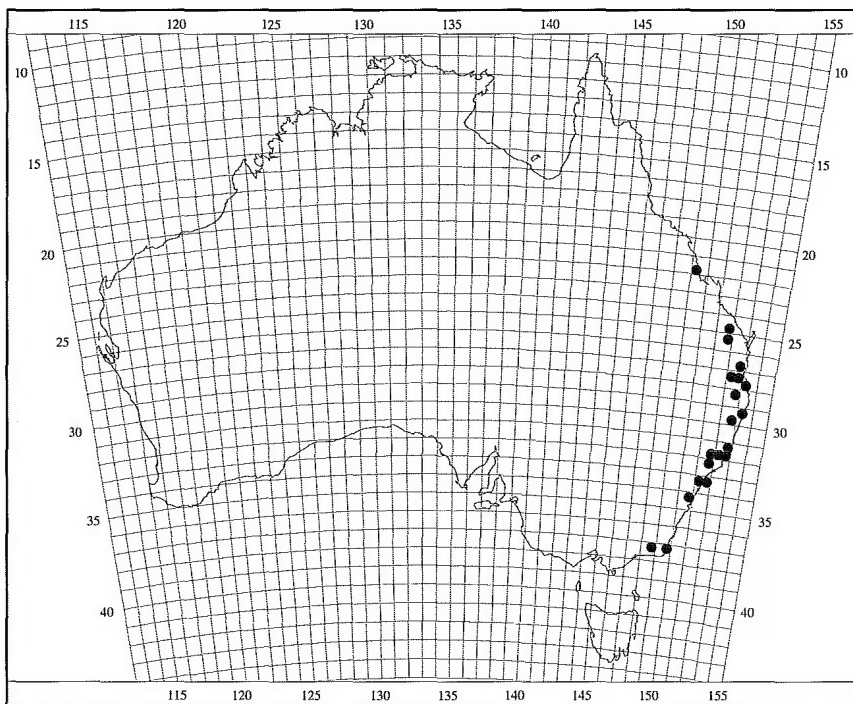
Notes: *R. x novus* is a naturally occurring hybrid, between *R. moluccanus* var. *trilobus* (of *R.* subg. *Malachobatus*) and *R. parvifolius* L. (of *R.* subg. *Idaeobatus*). It is the only known hybrid between indigenous Australian *Rubus* taxa, and is perhaps the only naturally occurring inter-subgeneric hybrid for the genus *Rubus*, although Kalkman (1984) speculated on the existence of an inter-subgeneric hybrid for a specimen he collected (No. 4856). I have not seen this specimen.

R. x novus is sterile. While it flowers well, no fruits have ever been collected or reported, and I have never seen any, despite actively searching for them.

Typification: Kuntze (1879) clearly states that he saw a specimen from Hastings River, New South Wales at the Herbarium of the Royal Botanic Gardens, Kew and as the protologue agrees with this specimen, it is chosen as the lectotype for the name *Rubus x novus*.

The holotype of *R. x illegitimus* was destroyed during World War II. Isotypes were sought by the present author from E, K, BM, FI, G and W, but without success. The protologue is sufficiently detailed to allow placement of this name as a synonym of *R. x novus*.

Rubus subg. **Diemenicus** A.R.Bean subg. **nov.**



Map 4. Distribution of *Rubus x novus*

Herba rhizomate repente, sine aculeis; folia omnia radicalia, petioli e basi vaginantes, stipulae nullae; flores solitarii, unisexuales, carpellis 6–10; glandulae breviter pedunculares in petiolis foliis pedunculis ovariisque adsunt; fructus rubri, succulenti.

Typus: *R. gunnianus* Hook.

A monotypic subgenus.

Rhizomatous creeping herb, prickles absent, leaves all radical, petioles sheathing at base, stipules absent; flowers solitary, unisexual, carpels 6–10; shortly stalked glands present on petioles, leaves, peduncles and ovaries; fruits red, succulent.

Etymology: Named for Van Diemen's Land, now known as Tasmania, where the type species is endemic.

Rubus gunnianus Hook., *Icon. Pl.* 3: t. 291 (1840). **Type:** Tasmania. Chilton, Surrey Hills, 16 February 1837, *R. Gunn* 271/1837 (lecto: K, here designated; isolecto: NSW [NSW385192]).

Illustrations: Cochrane et al., *Fl. and Plants of Victoria & Tasmania*, p. 112 (1980); Macoboy et al. (eds), *Gard. Encyc. of Pl. & Flowers*, p. 321 (1992).

Prostrate herbs, lacking prickles, rhizomatous. Vertical stems 1–10 mm long, rarely to 50 mm, glabrous, prickles absent. Leaves borne in clusters at each node; up to 60 mm long, mostly with 3 leaflets, but with unifoliate leaves often present at base of cluster. Petioles 12–36 mm long, grooved on upper surface, sheathing at base with sparse, simple white hairs and stipitate red glands. Petiolules of lateral leaflets 0–0.5 mm long, grooved, glands present; petiolules of terminal leaflets 0–3 mm long, grooved above, glabrous, glands present. Stipules absent. Blades of terminal leaflets broadly ovate, 9–19 × 7–14 mm, the lateral leaflets broadly ovate, 6–8 × 4.5–5 mm; glabrous or with sparse hairs along midrib, glands stipitate, red, turning black with age, rather sparse; base broadly cuneate or obtuse, sometimes oblique in lateral leaflets; apex acute; margins serrate to deeply lobed. Leaflets penninerved with 2–4 pairs of lateral veins,

branching before the margin and terminating at a sinus; venation reticulate, midrib and lateral veins impressed above, raised below. Inflorescence axillary, solitary. Bracts ovate, entire, to 6 mm long, glabrous or with sparse hairs and glands along margins, apex obtuse. Peduncles terete, 4–16 mm long, with white hairs, stipitate glands present. Flowers functionally unisexual. Flower buds globular, hypanthia obconical, sparsely hairy. Sepals persistent, deltate to ovate, 4–5.5 × 2.5–3.5 mm, entire; with sparse white hairs on both surfaces. Petals not persistent, narrowly elliptical, not clawed, 6–10 × 2–4.5 mm, glabrous, white. Stamens 16–23, glabrous; filaments up to 2.5 mm long, anthers c. 0.75 mm long. Carpels 6–10, glabrous; glands numerous per carpel, shortly stalked; ovaries c. 0.8 mm long, styles c. 0.75 mm long. Torus small, hairy between the carpels; annulus of hairs absent at base of torus. Collective fruit globular, c. 10 × 10 mm when dried, of unknown size when fresh, exocarp red at maturity; carpels 2–4 per fruit. Endocarps ellipsoidal, lacunose, c. 4.5 × 2.5 × 2.5 mm.

Selected specimens: **Tasmania.** NORTH WEST: Waratah, Dec 1914, *Lucas* s.n. (NSW). Ringwood, Nov 1841, *Milligan* 152 (HO). BEN LOMOND: summit of Mt Maurice, Dec 1979, *Buchanan* 71 (HO); Mt Barrow, Jan 1922, *Rupp* s.n. (MEL). WEST COAST: Trig station of Raglan Range, Dec 1984, *Collier* 156 (HO); Linda track, Jan 1903, *Rodway* 214 (HO); Lake Rhona, Denison Range, Jan 1977, *Tyler* s.n. (HO). CENTRAL HIGHLANDS: Cradle Valley, Dec 1931, *Anderson* 9 (HO); Drys Bluff, NE face, just below the summit, Dec 1984, *Buchanan* 4932 (HO); below Eldon Bluff, Feb 1987, *Buchanan* 9970 (HO); Micklethwaite Marsh, Mar 1985, *Morris* 8535 (HO); King William Range, Nov 1933, *Rodway* 154 (HO). MT. FIELD: Lake Fenton, Nov 1914, *Gibbs* 6508 (BM); Mt Field N.P., Jun 1979, *Noble* 28843 (HO); near Lake Dobson huts, Mt Field N.P., Jan 1978, *Smith* 237 (HO). MT. WELLINGTON: Mt Wellington, Jan 1892, *Bailey & Shirley* (BR); Mt Wellington, Feb 1891, *Rodway* s.n. (MEL). SOUTH WEST: Southern Jubilee Range, Jan 1985, *Buchanan* 5396 (HO); 3 km ESE of Mt Mueller, Dec 1990, *Collier* 4958 (HO); Hartz Mountain, Apr 1901, *Rodway* 214 (HO).

Distribution and habitat: *Rubus gunnianus* is endemic to the island of Tasmania, where it is apparently common in many places between altitudes of 620–1280 metres (Map 1). Its most commonly recorded habitat is amongst alpine or sub-alpine shrubbery, but it is also recorded from Buttongrass (*Gymnoschoenus sphaerocephalus* (R.Br.)

Hook.f.) plains, shady gullies and dolerite cliffs.

Phenology: *R. gunnianus* produces flowers from November-February and fruits from January-April.

Notes: *R. gunnianus* has no close relatives. While Focke (1910) placed it in *R.* subg. *Dalibarda*, he also stated that “*R. gunnianus* and *R. dalibarda* truly constitute two characteristic subgenera”.

A new subgenus is here erected to accommodate *R. gunnianus*, as it has some characteristics unique for *Rubus*, or at least its non-woody members. These include i) leaves in rosettes, often arising directly from the rhizome, or with short erect branches; ii) absence of stipules (unlike all other creeping *Rubus*); iii), broad petioles sheathing at their bases; iv) prominent glands on the carpels, unlike all other herbaceous species of *Rubus*; v) flowers often (perhaps always) unisexual, with either stamens or carpels being imperfectly developed (Curtis 1956; Rodway in litt.), and this can be observed in the herbarium. All other herbaceous Rubi are bisexual, except *R. chamaemorus* L., which is dioecious (Bailey 1941); vi) The major lateral veins in the leaves terminate at a sinus. This occurs in no other *Rubus* species that I have examined, and hence this is possibly another unique characteristic, although the available data are very limited.

According to Focke (1910), *R. gunnianus* is the smallest of all *Rubus* species.

Typification: The lectotype comprises four separate pieces (two bearing flowers and two bearing fruit), in a horizontal row across the centre of the sheet, and labelled “Mr Gunn 271/1837, Van D. Land, ripe fruit at Chilton, Surrey Hills, 16/2/37”. Two of these pieces appear to form the basis of the illustrations accompanying the protologue. Other specimens mounted on the same sheet are dated 1840 and 1845, and could not have been used by Hooker in drawing up his description. Hence they are excluded from forming part of the type.

The isolectotype at NSW consists of the mounted material only. The material in the

packet was collected by J. Milligan and is hence excluded.

Conservation status: *R. gunnianus* is reported to be common throughout its habitat, and is present in at least two National Parks. No conservation coding is recommended.

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